

ABSTRACT OF THE DISCLOSURES

Disclosed is an optical switch using V-beam electrothermal actuators, buckle beam springs, and movement translation mechanism with its bi-directional movable latched function for optical communication applications. In the preferred embodiments, various layout combinations of the V-beam electrothermal actuators, the buckle beam springs, a reflective mirror shutter connected to a shutter beam, and spatial joint to enable various operation approaches to realize the bi-stable switching function without external electrical load and electrical power consumption of said optical switch regarding the input optical signals transmitting toward the output channels, or the input optical signals transmitting forward to the reflective mirror shutter and then being reflected toward the output channel. The forward moving displacement generated by electrothermal V-beam actuators will move the shutter beam and reflective mirror shutter from one stable position to another stable position of the bi-stable positions of latched optical switch. The buckle beam springs exert spring force due to its natural deflection onto the shutter beam against the force from actuators, environment vibrations, and shocks, etc.; thus the optical switch performs the latch function with any external electrical load and electrical power consumption.